

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 April 2002 (25.04.2002)

PCT

(10) International Publication Number  
**WO 02/33951 A2**

- (51) International Patent Classification<sup>7</sup>: H04N (74) Agent: GROENENDAAL, Antonius, W., M.; Internationaal Octrooibureau B.V., Prof Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (21) International Application Number: PCT/EP01/11607
- (22) International Filing Date: 4 October 2001 (04.10.2001) (81) Designated State (*national*): JP.
- (25) Filing Language: English (84) Designated States (*regional*): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (26) Publication Language: English
- (30) Priority Data: 09/688,644 16 October 2000 (16.10.2000) US Published:  
— without international search report and to be republished upon receipt of that report
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



WO 02/33951 A2

(54) Title: SYSTEM AND METHOD FOR ONLINE ORDERING UTILIZING A DIGITAL TELEVISION RECEIVER

(57) Abstract: A transaction controller is provided either in a digital television receiver or a set top playback device for detecting product identification records embedded in a video data stream. The product identification record is inserted into a recorded or broadcast video program data stream. A user may utilize a remote control to input preferences, billing and shipping information and any other information necessary for completing an order. The transaction controller identifies the product identification record and attaches a generated product order record along with a stored user identification record. The combination of records are then encoded and sent to the product supplier for fulfillment.

## System and method for online ordering utilizing a digital television receiver

## TECHNICAL FIELD OF THE INVENTION

The present invention is directed, in general, to broadcast and recorded transmissions to a digital television receiver and, more specifically, to a system for enabling order fulfillment directly through the digital television receiver.

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## BACKGROUND OF THE INVENTION

Currently television receivers and set top boxes enable the presentation of the features and characteristics of products that companies wish to sell, through the use of commercials. The commercials may be advertisements that accompany regular programming or they may be "infomercials," where the whole video program is devoted to promoting a single product. There are channels that are devoted to presenting "home shopping" video programs via the television set in order to sell products around the clock. In order to purchase a product that a consumer has seen on the television set in one of these venues, a consumer usually has to call a special phone number, visit an e-commerce ready web site via the Internet or go to a "brick and mortar" store that carries the product.

A combination digital television (TV) and computer has been proposed to provide a more convenient and user-friendly method of shopping on line. In another configuration a digital TV, with browser capabilities embedded, that is capable of running downloaded applications is also being considered. However, the proposed embedded systems that are to be used in digital TV platforms are somewhat limited and the requirements that browser and interactive applications impose on the digital television is significant. The complexity of the system as perceived by the market may discourage or at least delay adoption by the market place. Furthermore, these applications are derived from applications that are Internet based and "surfing" the Internet is considered very different from viewing TV broadcasts. Internet shopping requires that a shopper visit a site and seek out an item after which the content is "pulled" to the user's display from a server on the web site. Advertising on regular television is "pushed" to the user but there is no mechanism to purchase without making an extra effort such as, going to a store, calling a mail order

company and placing the order by phone, etc. Seeing a product on a television program and actually making a purchase soon thereafter is not easy.

There is therefore a need in the art for a user-friendly application embedded in a digital TV that enables order fulfillment without the need for Internet style interaction.

- 5 There is also a need in the art for simplifying and providing a sense of convenience and immediacy in the online shopping and purchasing experience.

## SUMMARY OF THE INVENTION

- To address the above-introduced deficiencies of the prior art, the present  
10 invention introduces systems, as well as methods of operating such systems, for processing a received video data stream to identify product identification records embedded therein and to selectively generate a product order record as a function of a stored user record and an identified one of the embedded product identification records. Such systems include a transaction controller that operates as a product order "enabler" and may be associated with  
15 a television, digital versatile disk ("DVD") player, video-cassette recorder ("VCR"), suitably arranged computer system, or other like device.

- According to one advantageous embodiment, a transaction controller is imparted for use in a video display system. The video display system illustratively includes a video display device and a memory operable to store one or more user records, along with the  
20 transaction controller. The transaction controller is associated with the memory and is operable to process a received video data stream to identify product identification records embedded therein and to selectively generate a product order record as a function of the stored user record and an identified one of the embedded product identification records. In short, the transaction controller serves to match the stored user record and selected ones of  
25 the embedded product identification records.

- According to a related embodiment, the video display system further includes an encoder, and the transaction controller is further operable to direct the encoder to encode the selectively generated product order record for transmission as a function of the identified one of the embedded product identification records. In a yet further related embodiment, the  
30 transaction controller is operable to direct the video display system to transmit the encoded product order record to a product supplier as a function, at least in part, of a URL associated with the identified one of the embedded product identification records.

User selections may suitably be made by the user using a remote control device, possibly having an infrared ("IR") port for communication with an IR port associated

with the video display system. According to one advantageous embodiment, the transaction controller further includes an interface that is operable to receive a user command signal directing the transaction controller to select the identified one of the embedded product identification records. Thereafter, the transaction controller via the display device (e.g, a  
5 further interface) is operable to communicate product order information associated with the product order record to a user, and the transaction controller is further operable to control the interface to prompt the user to confirm at least a portion of the communicated product order information associated with the product order record.

The foregoing has outlined rather broadly the features and technical  
10 advantages of the present invention so that those skilled in the art may better understand the Detailed Description of the Invention that follows. Additional features and advantages of the invention will be described hereinafter that form the subject of the claims of the invention. Those skilled in the art should appreciate that they may readily use the conception and specific embodiments disclosed as a basis for modifying or designing other structures for  
15 carrying out the same purposes of the present invention. Those skilled in the art should also realize that such equivalent constructions do not depart from the spirit and scope of the invention in its broadest form.

Before undertaking the Detailed Description of the Invention, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent  
20 document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or," is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, and the term "associable" may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be  
25 proximate to, be bound to or with, have, have a property of, or the like; and the terms "controller" and "processor" mean any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some suitable combination of at least two of the same. It should be noted that the functionality associated with any particular controller/processor may be centralized or  
30 distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

## BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, wherein like numbers designate like objects, and in which:

5           FIGURE 1 illustrates an exemplary video playback device 150 and television set 105 according to one embodiment of the present invention;

FIGURE 2 illustrates exemplary video playback device 150 in greater detail according to one embodiment of the present invention;

10           FIGURE 3 illustrates an exemplary television receiver 105, according to one embodiment of the present invention;

FIGURE 4 depicts an exemplary process for enabling order fulfillment utilizing a digital television receiver according to an advantageous embodiment of the present invention; and

15           FIGURE 5 is a high-level block diagram illustrating an exemplary process for identifying and responding to a product identification record, according to an embodiment of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

20           FIGURES 1 through 5, discussed below, and the various embodiments used to describe the principles of the present invention in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the invention. Those skilled in the art will understand that the principles of the present invention may be implemented in any suitably arranged video display system (television set) or video playback device.

25           FIGURE 1 illustrates exemplary video playback device 150 and television set 105 according to one embodiment of the present invention. Video playback device 150 receives incoming television signals from an external source, such as a cable television service provider (Cable Co.), a local antenna, the Internet, or a DVD or VHS tape player, and transmits a user-selected channel to television set 105. In RECORD mode, video playback  
30           device 150 may demodulate an incoming radio frequency (RF) television signal to produce a baseband video signal that is recorded and stored on a storage medium within or connected to video playback device 150. In PLAY mode, video playback device 150 reads a stored baseband video signal (i.e., video program) selected by the user from the storage medium and transmits it to television set 105.

For example, if video playback device 150 is a videocassette recorder (VCR), also referred to as a video tape recorder (VTR), video playback device 150 stores and retrieves the incoming television signals to and from a magnetic cassette tape. If video playback device 150 is a disk drive-based device, such as a ReplayTV recorder or a TiVO recorder, video playback device 150 stores and retrieves the incoming television signals to and from a computer magnetic hard disk rather than a magnetic cassette tape. In still other embodiments, video playback device 150 may store and retrieve from a local read/write (R/W) digital versatile disk (DVD) or R/W CD-ROM. Thus, the local storage medium may be fixed (i.e., hard disk drive) or removable (i.e., DVD, CD-ROM).

Video playback device 150 comprises infrared (IR) sensor 160 that receives commands (such as Channel Up, Channel Down, Volume Up, Volume Down, Record, Play, Fast Forward (FF), Reverse, and the like) from remote control device 125 operated by the user. Television set 105 is a conventional television comprising screen 110, infrared (IR) sensor 115, and one or more manual controls 120 (indicated by a dotted line). IR sensor 115 also receives commands (such as volume up, volume down, power ON/OFF) from remote control device 125 operated by the user.

It should be noted that video playback device 150 is not limited to receiving a particular type of incoming television signal from a particular type of source. As noted above, the external source may be a cable service provider; a conventional RF broadcast antenna, a satellite dish, an Internet connection, or another local storage device, such as a DVD player or a VHS tape player. In some embodiments, video playback device 150 may not even be able to record, but may be limited to playing back television signals that are retrieved from a removable DVD, CD-ROM, or cassette tape. Thus, the incoming signal may be a digital signal, an analog signal, or Internet protocol (IP) packets. However, for the purposes of simplicity and clarity in explaining the principles of the present invention, the descriptions that follow shall generally be directed to an embodiment in which video playback device 150 receives incoming television signals (analog and/or digital) from a cable service provider or from a Digital Video Disk playback device. Nonetheless, those skilled in the art will understand that the principles of the present invention may readily be adapted for use with wireless broadcast television signals, local storage systems, an incoming stream of IP packets containing MPEG data, and the like.

FIGURE 2 illustrates exemplary video playback device 150 in greater detail according to one embodiment of the present invention. Video playback device 150 comprises IR sensor 160, video processor 210, MPEG encoder 220, hard disk drive 230,

MPEG2 decoder/NTSC encoder 240, and video recorder (VR) controller 250. Video playback device 150 further comprises frame grabber 260, memory 265 (which may comprise a non-volatile random access memory) and transaction controller 285. VR controller 250 directs the overall operation of video playback device 150, including View mode, Record mode, Play mode, Fast Forward (FF) mode, Reverse mode, among others.

In View mode, VR controller 250 causes the incoming television signal from the cable service provider to be demodulated and processed by video processor 210 and transmitted to television set 105, without storing or retrieving from hard disk drive 230. Video processor 210, which may be, for example, a TriMedia (TM) 1100 media processor, contains radio frequency (RF) front-end circuitry for receiving incoming television signals from the cable service provider, tuning to a user-selected channel, and converting the selected RF signal to a baseband television signal (e.g., super video signal) suitable for display on television set 105. Video processor 210 also is capable of receiving a conventional NTSC signal from MPEG2 decoder/NTSC encoder 240 and video frames from CC memory 280 and transmitting a baseband television signal (e.g., super video signal) to television set 105.

In Record mode, VR controller 250 causes the incoming television signal to be stored on hard disk drive 230. Under the control of VR controller 250, MPEG2 encoder 220 receives the incoming television signal from the cable service provider and converts the received RF signal to MPEG format for storage on hard disk drive 230. In Play mode, VR controller 250 directs hard disk drive 230 to stream the stored television signal (i.e., video program) to MPEG2 decoder/NTSC encoder 240, which converts the MPEG2 data from hard disk drive 230 to, for example, a super video (S-Video) signal that video processor 210 transmits to television set 105.

It should be noted that the choice of the MPEG2 standard for MPEG2 encoder 220 and MPEG2 decoder/NTSC encoder 240 is by way of illustration only. In alternate embodiments of the present invention, the MPEG encoder and decoder may comply with one or more of the MPEG-1, MPEG-2; MPEG-4, and MPEG-7 standards.

For the purposes of this application and the claims that follow, hard disk drive 230 is defined to include any mass storage device that is both readable and writable, including conventional magnetic disk drives and optical disk drives for read/write digital versatile disks (DVD-RW), re-writable CD-ROMs, VCR tapes and the like. In fact, hard disk drive 230 need not be fixed in the conventional sense that is permanently embedded in video playback device 150. Rather, hard disk drive 230 includes any mass storage device that is dedicated to video playback device 150 for the purpose of storing recorded video programs.

Thus, hard disk drive 230 may include an attached peripheral drive or removable disk drives (whether embedded or attached), such as a jukebox device that holds read/write DVDs or rewritable CD-ROMs. Furthermore, in an advantageous embodiment of the present invention, hard disk drive 230 may include external mass storage devices that video playback  
5 device 150 may access and control via a network connection (e.g., Internet protocol (IP) connection), including, for example, a disk drive in the user's home personal computer (PC) or a disk drive on a server at the user's Internet service provider (ISP).

Frame grabber 260 captures and stores video frames from the output of MPEG2 decoder/NTSC encoder 240. Transaction controller 285 analyzes the video frames  
10 to determine whether there are any product identification records embedded. Under the direction of programs stored in memory 265, VR controller 250 modifies the video signal being processed in video processor 210 to include images associated with transaction control program 270 of the present invention as well as any other (user controlled) graphics. Transaction control program 270 comprises a set of instructions executable by controller 250  
15 that control the operation of video display screen (not shown) and other visually or audibly perceptible aspects of the operation of television receiver 105.

Memory 265 includes storage for transaction control editing program 275, which comprises a set of instructions, executable by VR controller 250, for modifying different aspects of the video image and other visually or audibly perceptible aspects of the  
20 operation of television receiver 105. VR Controller 250 also runs transaction control editing program 275 when a user desires to modify one or more of user profiles stored in memory 265, including exemplary user profile 280, 281 and 282, which are arbitrarily labeled User 1, User 2, and User 3. Transaction control program 270 uses the values stored in user profiles, for instance user profile 280 profile, to transmit user profile 280 credit card  
25 number or shipping address to a vendor or to review a purchasing history in user profile 280 and any other similar features that may be modified by user profile 280.

In an advantageous embodiment of the present invention, transaction control editing program 275 can create and store several different user files so that, for example, each member of a household may maintain a personal user file with specific password, financial  
30 and historical information. In an alternate advantageous embodiment of the present invention a user may modify user profile 280 using remote control 125 and an onscreen menu and keyboard display to select different options and enter parameter values provided by transaction control editing program 275.



FIGURE 3 illustrates an exemplary television receiver 105, according to one embodiment of the present invention. Television receiver 105 comprises tuner 305, intermediate frequency (IF) processor (IF PROC) 310, demodulation (DEMOD) circuit 312, demultiplexer (DEMUX) 315, MPEG decoder 320, post processor (POST PROC) 325, and video display screen 110. Video display screen 110 may be a cathode ray tube or a flat panel display or any type of video display device.

Tuner 305 receives an incoming radio frequency (RF) signal from either a cable source or a satellite antenna source through set top box 150 (not shown in FIGURE 3) or a broadcast receive antenna source (not shown). Tuner 305 filters out a particular video signal from the RF signal according to the channel selected by the user through remote control 125 or television manual controls 120. Tuner 305 down-converts the filtered RF signal to produce an intermediate frequency (IF) signal. Intermediate frequency processor (IF PROC) 310 further down-converts the output of tuner 305 to produce a modulated baseband signal. Demodulation (DEMOD) circuit 312 further demodulates the modulated baseband signal to produce a transport stream.

Demultiplexer (DEMUX) 315 extracts at least one elementary stream, such as an MPEG encoded data stream, from the transport stream and transfers the extracted elementary stream to MPEG decoder 320. MPEG decoder 320 converts the incoming encoded MPEG stream and generates a standard video signal capable of being displayed on video display screen 110. Post processor (POST PROC) 325 may perform several different types of video signal processing, including (a) adaptive noise level reduction, (b) level sharpness enhancement, (c) luminance-chrominance separation, (d) motion detection, and (e) motion estimation and compensation. Post processor 325 produces signals for output to video display screen 110 and to other elements of television receiver 105.

Television receiver 105 also includes controller 335, input/output (I/O) interface (IF) 340, memory 350, and digital video signal unit 370. Controller 335, I/O interface 340, memory 350, and digital video signal unit 370 are coupled together via communications bus 345. Controller 335 controls the operation of video display screen 110 and other visually or audibly perceptible aspects of the operation of television receiver 105 by executing programs stored in memory 350. Under the direction of programs in memory 350, controller 335 modifies the video signal being processed in post processor 325 to include images associated with transaction control program 355 of the present invention, as well as any other user-controlled graphics.

I/O interface 340 connects communications bus 345 to IR sensor 115 in television receiver 105 and to IR sensor 160 in set top box 150. I/O interface 340 is also connected to tuner 305. Memory 350 includes storage for transaction control program 355 and a group of user profiles, including exemplary user profiles 360, 361, and 362, which are  
5 arbitrarily labeled User 1, User 2, and User 3. In an advantageous embodiment of the present invention, memory 350 may comprise a non-volatile random access memory (RAM), such as a flash memory card.

Transaction control program 355 comprises a set of instructions executable by controller 335 that control the operation of video display screen 110 and other visually or  
10 audibly perceptible aspects of the operation of television receiver 105. Control signals from controller 335 reach video display screen 110 via post processor 325. Transaction control program 355 uses the values stored in user profile 360, for example, to transmit the credit card number of User 1 or shipping address to a vendor or to review the purchasing history of past transactions, or any other similar features that may be modified by User 1.

15 Transaction control editing program 357 comprises a set of instructions executable by controller 335 that are capable of modifying different aspects of the video image and other visually or audibly perceptible aspects of the operation of television receiver 105. Controller 335 runs transaction control editing program 357 when a user desires to modify one or more of user profiles 360, 361 or 362.

20 In an advantageous embodiment of the present invention, transaction control editing program 357 can create and store several different user files so that, for example, each member of a household may maintain a personal user file with specific password, financial and historical information. In an alternate advantageous embodiment of the present invention, a user may modify user profile 360 using remote control 325 and an onscreen  
25 menu and keyboard display to select different options and enter parameter values provided by transaction control editing program 357.

Digital video signal unit 370 comprises video signal converter 375, frame grabber 380, and video signal generator 385. Video signal converter 375 receives decoded video signals from post processor 325. The decoded video signals are the same decoded  
30 video signals that post processor 325 provides to video display screen 110. The decoded video signals represent the image carried on the incoming video signal from set top box 150 or a television antenna (not shown).

Video signal converter 375 uses well-known techniques to convert decoded video signals from post processor 325 to red (R), green (G), and blue (B) component video

signals for input to frame grabber 380. Frame grabber 380 accepts the R, G, and B video signals (RGB signals) that represent the video image being displayed by video display screen 110. Frame grabber 380 formats the RGB signals into video frames and transfers the video frames on communications bus 345 to controller 335 and I/O Interface 340.

- 5 Depending upon the status of any active remote control signals received through IR sensor 115 in television receiver 105 or IR sensor 160 in set top box 150, controller 335 analyzes incoming video frames from frame grabber 380 to implement any user initiated graphic or control changes. Additionally, transaction controller 365 analyzes the video frames to determine whether there are any product identification records embedded. This  
10 process is discussed in greater detail in FIGURE 4.

- Frame grabber 380 also receives on communications bus 345 copies of outgoing video bit streams sent by controller 335 to post processor 325 for display on video display screen 110. When outgoing video bit streams are present on communications bus 345 they represent outgoing graphical image(s) created by controller 335. The outgoing  
15 graphical image(s) may represent a product available image, product information or a product identification application (none shown) previously stored in memory 350. The outgoing graphical image(s) may represent other possible types of images that are to be transferred to video display screen 110.

- Frame grabber 380 uses well known techniques to detect an outgoing video bit  
20 stream on communications bus 345 from controller 335 or I/O interface 340. After frame grabber 380 detects an outgoing video frame from controller 335 or I/O interface 340, frame grabber 380 isolates the RGB components of the detected video frame and provides the respective RGB video data as red (R), green (G), and blue (B) video signals for input to video signal generator 385. Video signal generator 385 receives the red (R), green (G), and blue  
25 (B) video signals from frame grabber 380 and uses well known techniques to convert these signals to a digital video bit stream for output to video display screen 110. It is noted that video signal formats other than red (R), green (G), and blue (B) may be used to practice the invention. For example, a video signal format using Y, U and V signals may also be used.

- FIGURE 4 depicts an exemplary process for enabling order fulfillment  
30 utilizing a digital television receiver according to an advantageous embodiment of the present invention. The process begins with a user viewing a video program on the digital TV. The video program may be via recorded media such as digital-video-disk (DVD), CD-ROM, video cassette recorder (VCR) tape or the like. The video program may also be a program received on the digital television receiver via terrestrial broadcast, cable broadcast, satellite

broadcast or Internet broadcast. Initially, a product identification record of a vendor is provided to the video program producer or broadcaster. In the case of recorded removable storage media, such as a DVD, CD-ROM, or magnetic video cassette tape, the product identification record is provided to the producer or the DVD, CD-ROM, or magnetic video  
5 cassette tape and inserted at an advantageous point in the video program, or movie, on the storage medium.

The product identification record is a file that uniquely defines the product and the vendor. The file may contain a complete textual description of the product, the price of the product and the time and channel (in the case of a broadcast video program) that the  
10 product identification record was transmitted. An example of a product identification record utilizing eXtensible Markup Language (XML) for a broadcast product identification record or a product identification record embedded in a CD-ROM or a DVD is given below:

```
<product>
<vendor_ip_address>http://www.tvstore.CDVendor.com</vendor_ip_address>
15 <product_id>1234ABCD</product_id>
<medium type="broadcast" subtype="cable">
<channel>ABC</channel>
<date>12/12/1999</date>
<time zone="EST" begin="15:35:30" end="15:38:30"/>
20 </medium>
<price currency="USD">12.99</price>
</product>
```

Note that the actual transmission time of the product identification record has to be agreed to by the vendor and by the broadcaster. In the case of a DVD, the product  
25 identification record must be inserted by the producer of the DVD in an advantageous position, such as at the start or end of the video program, or at the location of a video frame associated with the product identification record.

The product identification record, when it is received from a DVD by the digital TV is detected by the transaction controller. Since the transaction controller may be  
30 provided in either TV or video playback device, hereinafter a reference to the digital TV will include the alternative of a video playback device and vice versa. The transaction controller then signals the availability of a product identification record to the user, utilizing a graphic symbol on the digital television display. If the product identification record is placed into a broadcast video program, it is broadcast during an advantageous time in the video program

that will increase the potential for sales of the product. (process step 400). The video program is transmitted to the user digital television receiver by either broadcast means (cable, terrestrial, satellite, etc.) or by recorded means (DVD, CD-ROM, VCR) (process step 402).

The user receives the transmitted audio/video signals and the transaction  
5 controller is attempting to detect any product identification records that may be included in the video stream (process step 404). The transaction controller makes a determination of whether a product identification record has been detected. If no file has been detected, the process continues to check the audio/video stream (process step 406). If the product  
10 identification record is detected, the transaction controller may display a graphic file or icon on the TV screen, signaling that a product is available for purchase. The graphic file may be stored onboard the digital television or may be attached to the product identification record.

Next, the broadcaster provides an order application graphics package for the product identification record. The order application is described in a Data Service Table (DST) in the Advanced Television Systems Committee (ATSC) terrestrial broadcast standard  
15 and can be stored, in memory on the digital television. The product identification record extension (i.e., xxx.ord) may be used as an identifier for the transaction controller to prompt the DST to generate an order application display when signaled by the user via a remote control device (process step 408). A DVD uses available DVD tables in a similar way. Additional information about the expiration date of the order or any other information  
20 pertinent to successful completion of an order may also be provided to the user.

The transaction controller may be built into the digital television and operate utilizing memory included on the digital television platform. Alternatively, the transaction controller may be part of the digital playback device described in FIGURE 2. The transaction controller may be accessed through a standard, on screen, TV menu setup  
25 utilizing a remote control to: 1) set a personal identification number (PIN); 2) provide billing information (through a keyboard or utilizing an onscreen keyboard); 3) select a default graphic to be used to signal the presence of an order application; 4) review records of previous orders and 5) select a communication protocol to use with the service provider. Further, each user may input or modify, or delete various records utilized for online  
30 purchasing that are stored in memory.

As soon as the transaction controller detects a product identification record, the availability of an order application is signaled by the transaction controller displaying a pre-selected graphic or the vendor-provided graphic on the user's display. The user then makes a choice of whether or not to purchase the displayed product (process step 410). If an

order is not entered, the video program continues to run until another product identification record is detected (returns to step 402). If the user places an order, the transaction controller requests authentication from the user, such as a PIN. PIN identification is only one method of authentication. Other approaches to authentication may include voice recognition,  
5 thumbprint identification, "smart" card and the like.

A determination is then made whether or not a valid authentication is received.

If a valid authentication is not received, the program continues (returns to step 402) and the transaction controller resets to detect another product identification record (process step 412).

If a valid authentication is received, the transaction controller loads the extracted product  
10 identification record from the incoming audio/video stream, the user's billing and shipping information file and a receiver identification, into a buffer and sends the information to a service provider (process step 414). After the service provider receives the purchase order and authentication, the order may be fulfilled, forwarded to the vendor that provided the product identification record or sent to a fulfillment service.

15 Billing and shipping information may be stored in memory in the digital television receiver, or playback device, for attachment to the product identification record for transmission. The information may alternatively be stored at the service provider thereby requiring only the transmission of the product identification record, the receiver ID and the authentication to be transmitted to the service provider. All the communications between the  
20 service provider and the digital television receiver, or playback device, is secured by encryption (process step 414).

A service provider may be defined differently due to the means for sending the video program to the digital television receiver. If the video program is received via cable, the cable broadcaster would be the service provider. If the video program is received through  
25 telephone lines, the broadcaster or a third party would be considered the service provider. If the video program is provided from a DVD playback device, the digital television receiver would be the service provider and provide the billing and shipping information, receiver ID, authentication, etc. to the vendor via Internet or telephone connection.

FIGURE 5 is a high-level block diagram illustrating an exemplary process for  
30 identifying and responding to a product identification record, according to an embodiment of the present invention. Digital platform 500 is a digital television receiver with an incorporated transaction controller. A DVD playback device with a transaction controller may be provided, as shown in FIGURE 1, if there is no transaction controller incorporated into the digital television.

Vendor 502 is a company that has a compact disk (CD) of a movie sound track recorded on a CD for sale. Vendor 502 provides broadcaster 504 or DVD producer 506 with a product identification record (not shown) that contains purchasing and descriptive information pertinent to the CD. The information in the product identification record  
5 contains all the information necessary to identify and purchase the product, including a description of the contents, the vendor information, price, etc., information similar to that of a price label found on a product in a store or mail order catalog.

DVD producer 506 would receive the product identification record in time to include it with the movie that features the soundtrack on the CD. At an opportune time  
10 during the movie, i.e., as the movie ends, a graphic (or icon) is generated and displayed on the user's television screen. The icon may be generated from a pre-selected icon stored in memory on the digital TV (or playback device memory) or attached to the product identification record.

An order application is then incorporated with the product identification  
15 record and may be stored with the broadcaster 504, in memory on the digital TV 500, in memory on DVD playback device or with a third party service provider 508. In the case of a broadcast video program, the order application is stored for the period of time agreed to by vendor 502 and broadcaster 504. If the video program is transmitted by DVD, additional information about the product identification expiration is provided to the user.

20 As soon as the demultiplexer extracts information about the order application the transaction controller (not shown) is triggered. If the user's response is yes, the transaction controller prompts the user to provide authentication, such as a PIN, voice recognition, smart card, etc. If the authentication is valid, the transaction controller loads the product identification record from the video stream, attaches the pre-loaded billing and  
25 shipping information of the user and transmits the information to service provider 508. The billing and shipping information may be stored at service provider 508, which would eliminate the need to attach the information at the user. The transmission containing the PIN of the user or other identification is encrypted.

Although the present invention has been described in detail, those skilled in  
30 the art should understand that they can make various changes, substitutions and alterations herein without departing from the spirit and scope of the invention in its broadest form.

## CLAIMS:

1. For use in a video display system (105), a transaction controller (285, 365) operable to (i) process a received video data stream to identify product identification records embedded therein and (ii) to selectively generate a product order record as a function of a stored user record and an identified one of said embedded product identification records.  
5
2. The transaction controller (285, 365) for use in the video display system (105) recited in Claim 1 further operable to encode said selectively generated product order record for transmission as a function of said identified one of said embedded product identification records.  
10
3. The transaction controller (285, 365) for use in the video display system (105) recited in Claim 2 further operable to transmit said encoded product order record to a product supplier as a function, at least in part, of a URL associated with said identified one of said embedded product identification records.  
15
4. The transaction controller (285, 365) for use in the video display system (105) as recited in Claim 1 comprising an interface (340) that is operable to receive a user command signal directing said transaction controller (285, 365) to select said identified one of said embedded product identification records.  
20
5. The transaction controller (285, 365) for use in the video display system (105) as recited in Claim 1 comprising an interface that is operable to communicate product order information associated with said product order record to a user.
- 25 6. The transaction controller (285, 365) for use in the video display system (105) as recited in Claim 1 wherein said stored user record further comprises a purchasing history associated with previous transactions of said user.



7. For use in a video display system (105), a method of operating a transaction controller (365) comprising the steps of:  
processing a received video data stream to identify product identification records embedded therein; and  
5 selectively generating a product order record as a function of a stored user record and an identified one of said embedded product identification records.
8. A video display system (105) comprising:  
a video display device (110);  
10 a memory (265,350) operable to store at least one user record; and  
a transaction controller (365), associated with said memory (265,350),  
operable to:  
process a received video data stream to identify product identification records embedded therein; and  
15 selectively generate a product order record as a function of said stored user record and an identified one of said embedded product identification records.
9. A method of operating a video display system (105) comprising the steps of:  
storing at least one user record in a memory (350);  
20 displaying a received video data stream on a display device (110);  
processing, with a transaction controller (365), a received video data stream to identify product identification records embedded therein; and  
selectively generating a product order record, with said transaction controller (365), as a function of a stored user record and an identified one of said embedded product  
25 identification records.
10. For use in a video playback device, a removable storage medium (230) having stored thereon a video program comprising a video track and an audio track, wherein said video playback device is capable of reading said video and audio tracks and playing said  
30 video and audio tracks on a video display (110) coupled to said video playback device (150), said removable storage medium (230) further having stored thereon at least one embedded product identification record associated with said video program, wherein said at least one embedded product identification record is usable by a transaction controller (285) associated with at least one of said video playback device (150) and said video display (110) to

selectively generate a product order record as a function of a stored user record and said at least one embedded product identification record.

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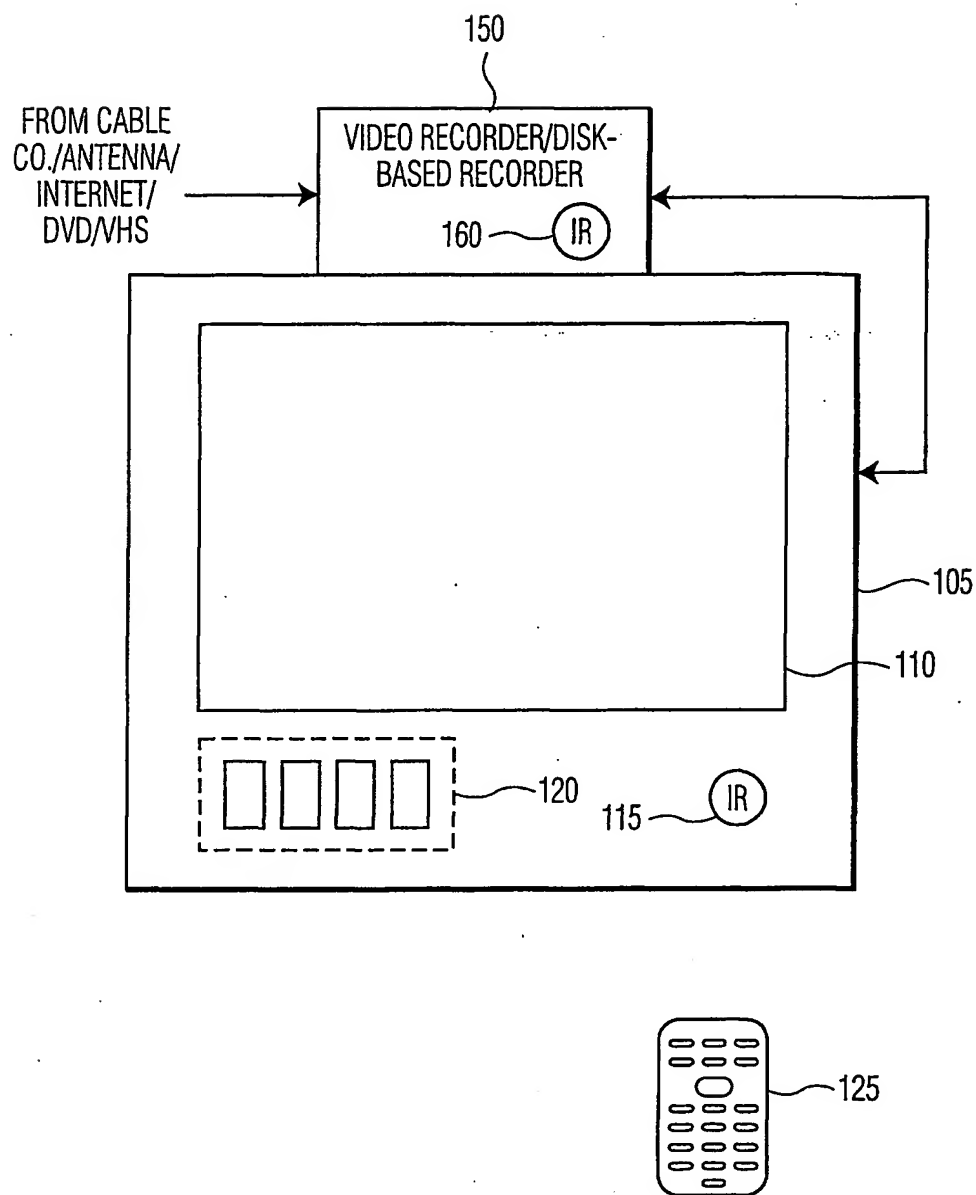
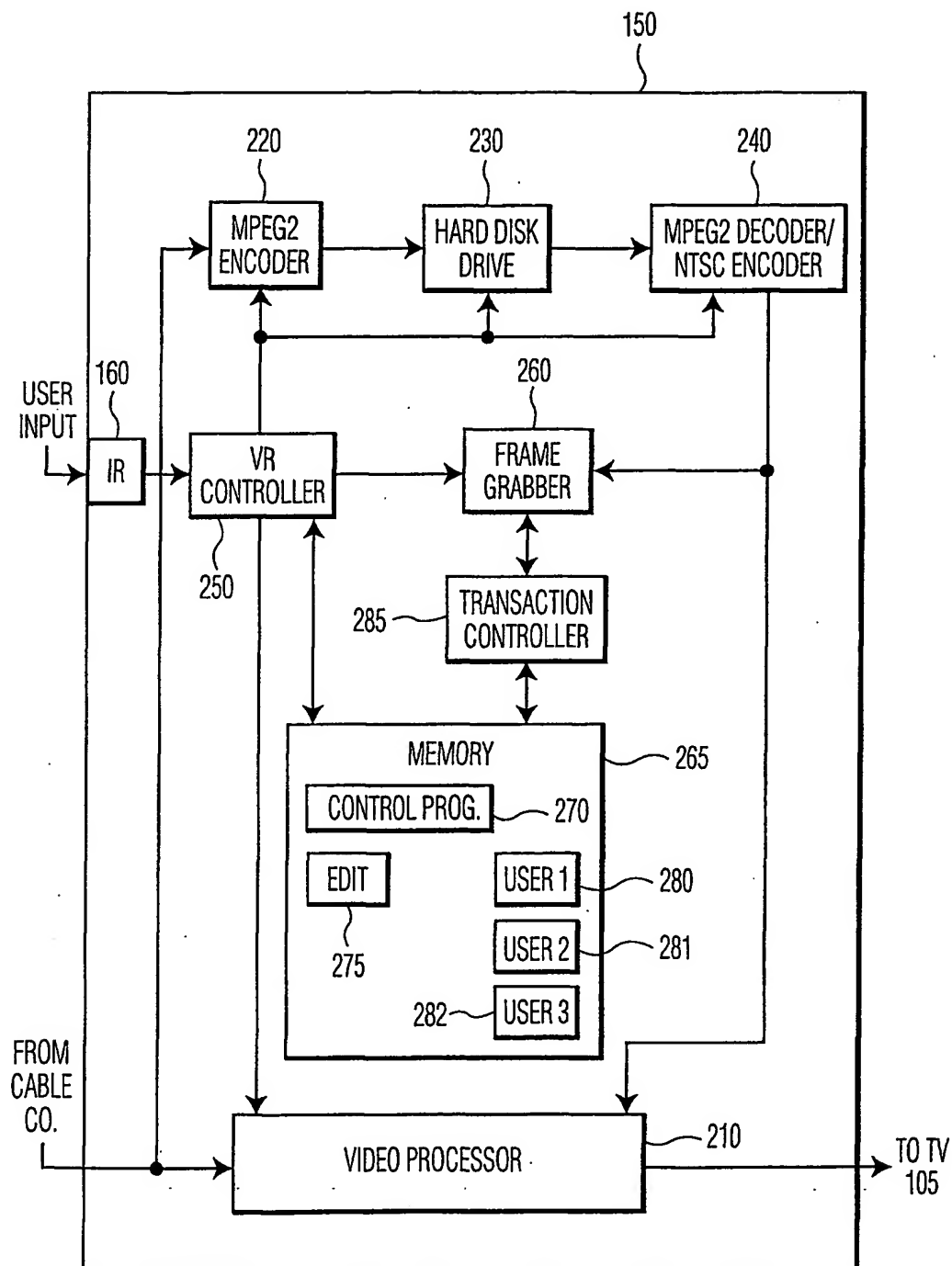


FIG. 1

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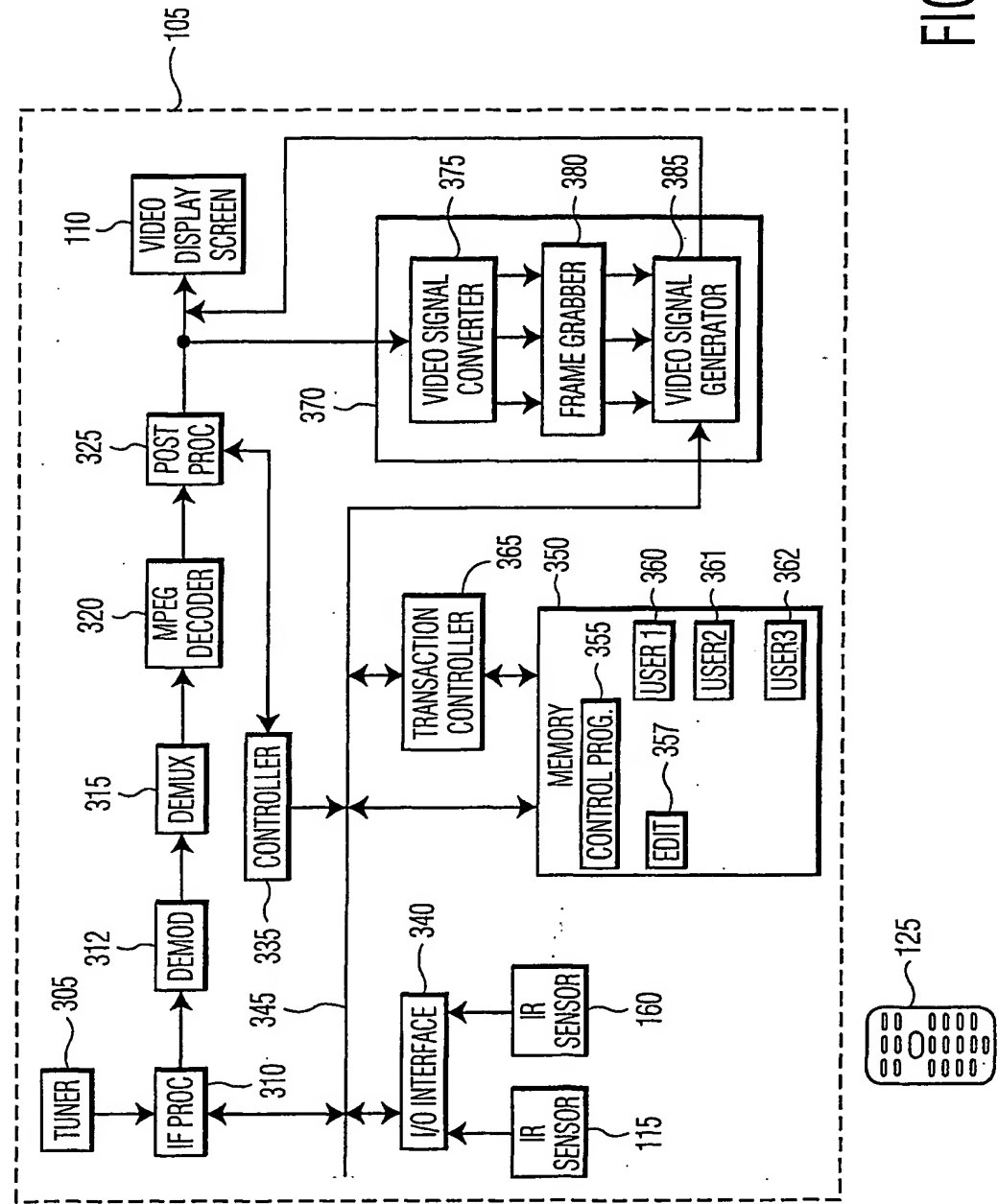


FIG. 3

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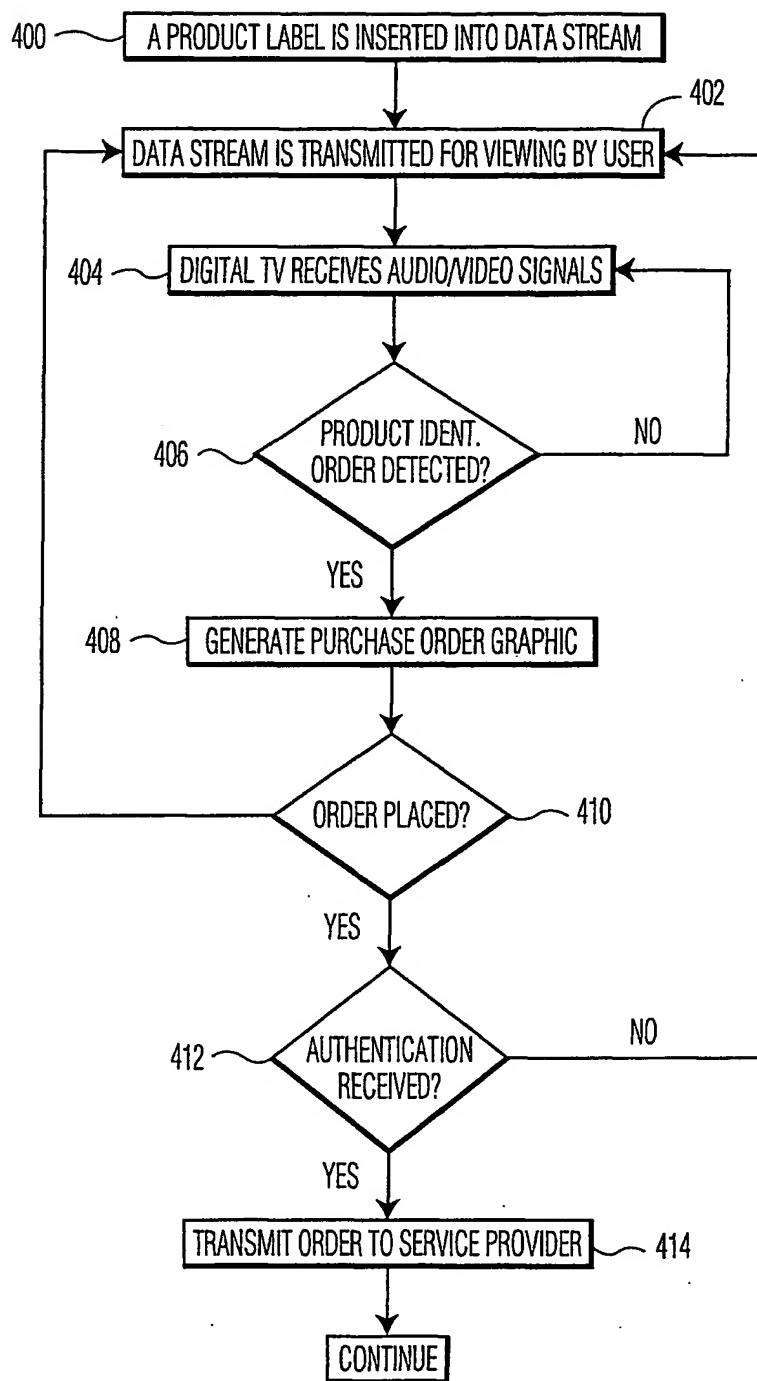


FIG. 4

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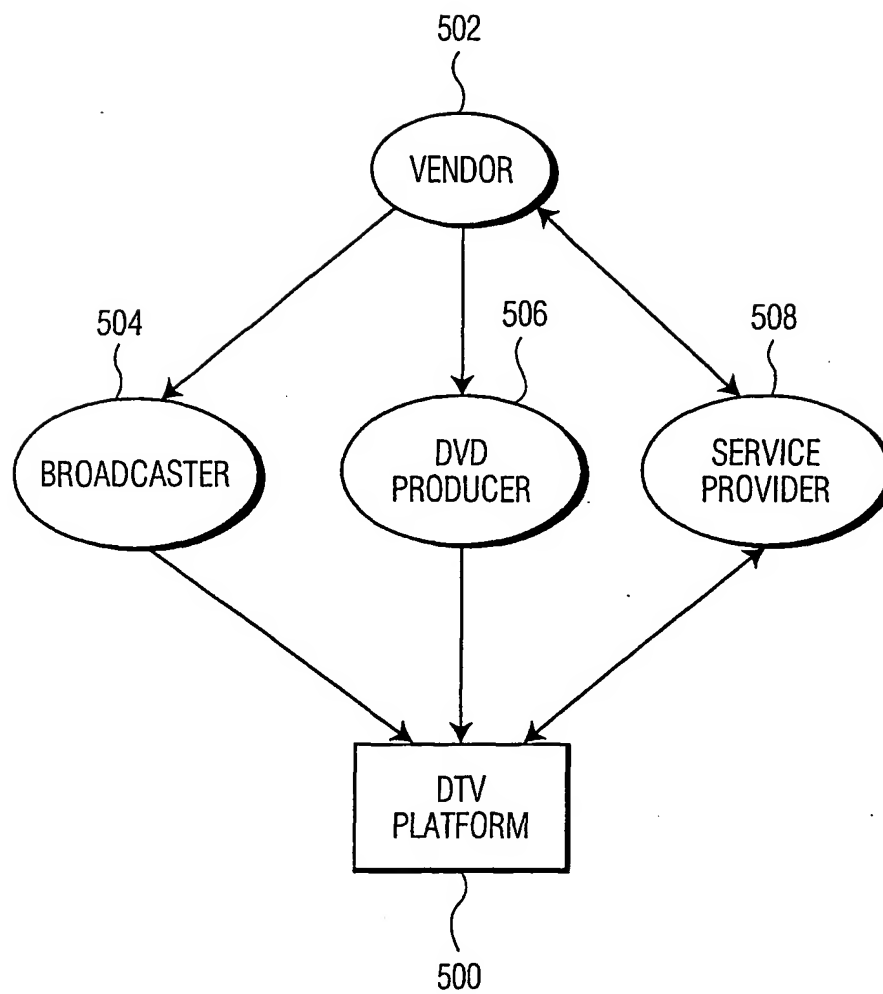


FIG. 5

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 April 2002 (25.04.2002)

PCT

(10) International Publication Number  
**WO 02/033951 A3**

(51) International Patent Classification<sup>7</sup>: H04N 7/173, 7/24, G06F 17/60

(74) Agent: GROENENDAAL, Antonius, W., M.; Internationaal Octrooibureau B.V., Prof Holstlaan 6, NL-5656 AA Eindhoven (NL).

(21) International Application Number: PCT/EP01/11607

(81) Designated State (*national*): JP.

(22) International Filing Date: 4 October 2001 (04.10.2001)

(84) Designated States (*regional*): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

(25) Filing Language: English

(26) Publication Language: English

Published:

— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(30) Priority Data:  
09/688,644 16 October 2000 (16.10.2000) US

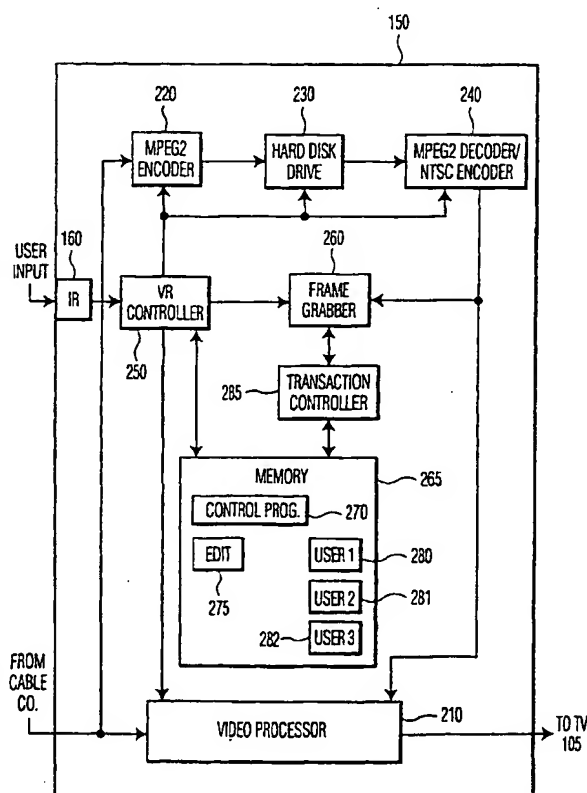
(71) Applicant: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(88) Date of publication of the international search report:  
4 July 2002

(72) Inventor: REVELIOTIS, Panagiotis, R.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SYSTEM AND METHOD FOR ONLINE ORDERING UTILIZING A DIGITAL TELEVISION RECEIVER



(57) Abstract: A transaction controller is provided either in a digital television receiver or a set top playback device for detecting product identification records embedded in a video data stream. The product identification record is inserted into a recorded or broadcast video program data stream. A user may utilize a remote control to input preferences, billing and shipping information and any other information necessary for completing an order. The transaction controller identifies the product identification record and attaches a generated product order record along with a stored user identification record. The combination of records are then encoded and sent to the product supplier for fulfillment.

WO 02/033951 A3



## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 01/11607

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 H04N7/173 H04N7/24 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

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Patent family members are listed in annex.

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Date of the actual completion of the international search

10 April 2002

Date of mailing of the international search report

14/05/2002

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International Application No

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